CALIFORNIA SHIPS to REEFS

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A California Non-Profit Corporation
Established 2006

From an environmentally threatening eyesore
to an economically beneficial beauty ...
EVERYONE BENEFITS FROM CS2R!

California Ships to Reefs (CS2R) is a 501(c)(3) Public Benefit Corporation consisting of a coalition of affiliated 501(c)(3) Public Benefit Corporations, each of which comprises a regional "Sink Group". Members of the Sink Groups are divers, business people, professionals, scientists and a multitude of other professions, with the primary purpose of carrying out the CS2R vision. A member of each Sink Group sits on the Board of Directors of CS2R. The core group instrumental in forming CS2R reefed the former Canadian frigate *HMCS Yukon* in San Diego in 2000.

California Ships to Reefs Vision:

- Establish a regional system of environmentally cleaned and strategically reefed ships along the California Coast accomplished via a statewide coalition of Sink Groups
- Establish California as an international dive destination
- Enhance the tourism industry centered on fishing and diving
- Enhance California ground fish populations

Why Reef Surplus Ships?

In 2001, the Rand Corporation, under contract to the Department of Defense, published an in-depth study of the various alternatives for removing retired ships from inventory.

This study looked at four alternatives and clearly showed reefing as the best alternative:

Long Term (100 years) Storage. Cost: $4.9 Billion
Requires periodic maintenance, is expensive, leaves hazardous materials aboard ships where they are subject to spillage, and at the end of 100 years, you still have just as many ships to dispose of as you started with.

Domestic Scrapping (Recycling). Cost: $1.9 Billion
Domestic scrap prices are too volatile to make scrapping economically attractive. Labor and safety costs do not allow for sufficient profit. There are too few shipyards which will engage in scrapping and there are none on the West Coast.

Overseas Scrapping. Cost: $170 Million (if it were allowed)
Towing to such places as India or Pakistan for scrapping is expensive. What makes overseas scrapping cheap is the fact that labor costs are low, safety costs are non-existent and there are no pollution controls. Toxic wastes are allowed to run off into the sea from the beaches where the ships are broken. Federal law now prohibits the export of such toxics as PCBs or asbestos, so the ships have to be cleaned here in any case, negating the savings.

Reefing. Cost: $500 Million
Sinking surplus ships as dive sites is cost effective. The Federal Government cleans them of toxics, as they have to do in any event. Private groups such as CS2R or local or state governments, such as along the Atlantic and Gulf coasts, then "diverize" them by cutting diver access openings into them and removing such things as overhead cables for safety. They are then sunk in selected locations to provide dive tourism attractions. An incidental benefit is that they provide structure and hiding places where

marine plants and animals can attach, or hide, to feed and breed. RAND determined that the cost of reefing a ship can be recovered within 12 years of its sinking through taxes on dive tourism alone.

Since 2000, *Yukon* has proved to be even better for the local economy of San Diego than the RAND report projected. In fact, as documented in a subsequent Rand study published in 2005, *Yukon* has injected approximately $4.5 million **per year** into the local economy.

The Ocean Environment

Reefing a ship provides a hard substrate to which plants and invertebrate animals may attach themselves. These, in turn, provide food resources for larger sedentary and free swimming animals, and the complex nooks and crannies of a ship's superstructure provide hideouts and nursery areas for fish and other animals.

While most of the information on increased fish populations is anecdotal, there are studies which confirm this. One is a study conducted by the Reef Environmental Education Foundation (REEF) on the *Spiegel Grove*, sunk off the Florida coast in 2002. This study indicated a 3 fold increase in fish numbers and a doubling of species in the year following its sinking. A study of the *Yukon*, sunk off of San Diego and commissioned by the San Diego Oceans Foundation, found that within the first year three species were using the *Yukon* as breeding habitat. Two of these species are depleted over their range.

Some opponents of reefing argue that marine life merely moves from other areas to the new reef, with no increase in population, merely an in-migration of existing population. They contend that the animal life is thus merely concentrated in a "killing zone". It has been shown, however, that there is no corresponding decrease of population in the surrounding waters as there would have to be if this was only an in-migration. There is no science to support the contention that reefed ships are merely Fish Attraction Devices (FADs).

Reefed ships also have another benefit for natural reefs and other dive sites. As a dive destination, a reefed ship takes some pressure off of the other local diving sites which can be "loved to death" by visits from too many divers. Touch a reef with a hand or a dangling gauge and you can damage or destroy a small piece. Hundreds of hands can cause a lot of damage. While all divers strive to secure their equipment and avoid any touching of sea bottom or structures, some contact cannot be avoided. Having reefed ships as additional dive sites eases the visitor pressure on natural sites.

The Local Economy

California's historic fishing ports are in dire economic straits. Catches of most inshore species and several migratory species have fallen off drastically in recent years. While several initiatives have been undertaken to address these issues, the problem of how to sustain the ports, and the vessels which call them home, has not been solved.

Artificial reefs provide a large influx of SCUBA divers and their families to the ports which are near them. Many fishing vessels can be converted on a seasonal basis for diving, and some boat owners/captains may choose to go exclusively into the dive tourism business. In San Diego, 10,600 dives per year are made on *HMCS Yukon,* 60% of these dives are made by divers from out of the area.

A significant number of jobs will be created to carry out the process of environmentally cleaning the ships, preparing them for reefing, and sinking.

A reefed ship attracts several types of recreational tourists. Hook and line fishermen are attracted to the reef for the obvious reason, more and bigger fish. Divers are attracted by the opportunity to dive on a "new" wreck. Those who have no intention of ever exploring the inside of a wreck (a penetration dive) will come to the site to view and take photos and video of the life which will colonize the new reef. And they will keep returning as the wreck matures and changes over time. . The influx of these tourists creates income for:

Hotels	Restaurants	Airlines	Car-Rental Agencies
Gas Stations	Dive Boat Operators	Dive Shops	Fishing Boat Operators

And numerous other shops and attractions in the area.

In a report by the Bulletin of Marine Science, dated 2006, the sinking of the *Spiegel Grove* resulted in a direct increase of expenditures (net increase $4.5MM), Sales/Output (net increase $5.2MM) and income (net increase $1.9MM) and the net addition of 137 jobs to local employment.

A study commissioned by the San Diego Oceans Foundation found that expenditures related to the *Yukon* have contributed $4.5MM to the local economy and supported 225 full time jobs with more then $700,000.00 in wages. *The local economy has benefited each year by more then three times ($4.5MM) the initial investment of $1.2MM.*

Commercial fishermen will benefit from the reef. Although they will avoid fishing on the wreck site itself due to the possibility of fouling their gear, commercial fishermen will benefit from the nursery/habitat area created as populations of larger fish are established in the area and move away from the reef.

The Local and State Tax Base

All of this additional local spending generates a corresponding increase in state and local sales tax revenue. By selling dive permits, the local Sink Groups, in conjunction with the Department of Fish and Game, will provide for maintenance of mooring buoys, navigation aids, etc.

Education

The public is fascinated by ships and things that involve them. As the people watched the transformation of the *HMCS Yukon*, from a combatant vessel into a clean and diver prepared reef-to-be, they also learned about the part this new reef would play in the ecology of their ocean. As this process is replicated, more and more members of the public will have this opportunity to learn about the current condition of their oceans, the ecological benefits of reefing and the economic benefits and redirection of their harbors and nearby areas.

During pre-sink baseline surveys and post sinking studies of the new life accumulating on the reef, along with comparisons of the artificial reef and any natural reefs nearby, both the general public and the academic/science community can learn and benefit. Several communities along our coast have interest in creating marine studies centers with strategically placed video cameras on the ships to demonstrate the power of the ocean to rapidly grow a flourishing reef. A ship based artificial reef can become a focal point for ongoing education, study and research as it evolves and changes from a ship into a living reef.

Going Forward

Over the next 10 years, CS2R intends to sink 10 to 20 surplus ships along the California Coastline to create artificial reefs. In doing so we will create premier dive sites which will boost the economies of the local harbor communities, provide alternative sustainable income to boat owner/operators, and promote millions of dollars in business for the local economies. The State of Florida alone has reefed over 400 vessels. The State and local governments recognize the huge economic benefit of cultured reefs and are currently pushing through legislation to create a $12MM matching fund trust to procure and sink these vessels.

In addition, these cultured reefs, as has been well documented, stimulate fish pro-creation and provide habitat for many species which are now depleted.

The net result of this activity, re-confirmed in California by the recent Rand Report, is that our state can reap broad economic and ecological benefits that far outweigh the modest investment.